CLAIMS

WHAT IS CLAIMED IS:

1. A system for providing wireless point-to-multipoint communications, the system comprising:

a first terminal configured to transmit a signal over a wireless link; and

a second terminal configured to receive the signal over the wireless link and to support simultaneously a plurality of channels.

2. A system according to Claim 1, wherein the second terminal is configured to operate in at least a first mode for supporting load sharing over the plurality of channels and a second mode to perform testing.

3. A system according to Claim 1, wherein the second terminal is configured to repeat the received signal over one of the plurality of channels.

4. A system according to Claim 1, wherein the second terminal comprises:

an indoor unit including,

a switching engine configured to switch data represented by the received signal, and

a transceiver configured to transmit the received signal over one of the plurality of channels; and

a plurality of outdoor units coupled to the indoor unit, each of the plurality of outdoor units including a plurality of antennas that are at least one of narrow beam antennas and sectorized antennas.

5. A system according to Claim 4, wherein the second terminal further comprises:

a digital modem within at least one of the indoor unit and each of the plurality of outdoor units.

6. A system according to Claim 4, wherein the second terminal further comprises:

a plurality of fiber optic links for providing the coupling between the plurality of outdoor units and the indoor unit.

7. A system according to Claim 4, wherein the switching engine is at least one of an Asynchronous Transfer Mode (ATM) switch, an Internet Protocol (IP) switch, an Ethernet switch, and a Virtual Local Area Network (VLAN) switch..

8. A terminal apparatus for providing wireless point-to-multipoint communications, the terminal apparatus comprising:

a plurality of outdoor units configured to support simultaneously a plurality of channels; and

an indoor unit coupled to the plurality of outdoor units and configured to receive a signal from a hub terminal over a wireless link.

9. A terminal apparatus according to Claim 8, wherein the indoor unit comprises:

a transceiver configured to receive a signal over one of the plurality of communications channels, and

a switching engine configured to switch data represented by the received signal.

10. A terminal apparatus according to Claim 9, wherein the switching engine is at least one of an Asynchronous Transfer Mode (ATM) switch, an Internet Protocol (IP) switch, an Ethernet switch, and a Virtual Local Area Network (VLAN) switch..

11. A terminal apparatus according to Claim 8, wherein each of the plurality of outdoor units comprises:

a plurality of antennas that are at least one of narrow beam antennas and sectorized antennas.

12. A terminal apparatus according to Claim 8, wherein the plurality of outdoor units are configured to operate in at least a first mode to support load sharing over the plurality of channels and a second mode to perform testing.

13. A terminal apparatus according to Claim 8, wherein the indoor unit is configured to repeat the received signal over one of the plurality of channels via a corresponding one of the plurality of outdoor units.

14. A terminal apparatus according to Claim 8, wherein at least one of the indoor unit and each of the plurality of outdoor units comprises a digital modem.

15. A terminal apparatus according to Claim 8, further comprising:

a plurality of fiber optic links for providing the coupling between the plurality of outdoor units and the indoor unit.

16. A method for providing wireless point-to-multipoint communications, the method comprising:

simultaneously receiving a signal over a communications channel among a plurality of communications channels supported by a single terminal; and

selectively repeating the signal to another terminal.

17. A method according to Claim 16, further comprising:

operating in at least a first mode to support load sharing over the plurality of communications channels and a second mode to perform testing.

18. A method according to Claim 16, further comprising:

switching data represented by the received signal using a switching engine that includes at least one of an Asynchronous Transfer Mode (ATM) switch, an Internet Protocol (IP) switch, an Ethernet switch, and a Virtual Local Area Network (VLAN) switch.

19. A method according to Claim 16, further comprising:

demodulating the received signal using a predetermined modulation scheme that includes at least one of dual polarization Quadrature Phase Shift Keying (QPSK) and dual polarization Quadrature Amplitude Modulation (QAM).

20. A radio network for providing point-to-multipoint communications, the network comprising:

a hub node configured to transmit radio signals according to a first modulation scheme; and

a plurality of relay nodes configured to receive the signals from the hub node and to forward the signals according to a second modulation scheme to a plurality of radio terminals.

21. A network according to Claim 20, wherein each of the relay nodes comprises a plurality of terminals.

22. A network according to Claim 21, wherein one of the plurality of terminals provides simultaneous transmission over a plurality of channels.

23. A network according to Claim 20, wherein the first modulation scheme includes at least one of Quadrature Phase Shift Keying (QPSK) and Quadrature Amplitude Modulation (QAM), and the second modulation scheme is dual polarization QPSK.

24. A terminal apparatus for providing wireless point-to-multipoint communications, the terminal apparatus comprising:

transmission means for simultaneously supporting a plurality of channels; and

an indoor unit coupled to the transmission means and configured to receive a signal from a hub terminal over a wireless link.

25. A terminal apparatus according to Claim 24, wherein the indoor unit comprises:

a transceiver configured to receive a signal over one of the plurality of communications channels, and

a switching engine configured to switch data represented by the received signal.

26. A terminal apparatus according to Claim 25, wherein the switching engine is at least one of an Asynchronous Transfer Mode (ATM) switch, an Internet Protocol (IP) switch, an Ethernet switch, and a Virtual Local Area Network (VLAN) switch..

27. A terminal apparatus according to Claim 24, wherein the transmission means comprises:

a plurality of antennas, each of the plurality of antennas being at least one of a narrow beam antenna and a sectorized antenna.

28. A terminal apparatus according to Claim 24, wherein the transmission means operates in at least a first mode to support load sharing over the plurality of channels and a second mode to perform testing.

29. A terminal apparatus according to Claim 24, wherein the indoor unit is configured to repeat the received signal over one of the plurality of channels via the transmission means.

30. A terminal apparatus according to Claim 24, wherein at least one of the indoor unit and the transmission means comprises a digital modem.

31. A terminal apparatus according to Claim 24, further comprising:

a plurality of fiber optic links for providing the coupling between the transmission means and the indoor unit.

32. A method for reconfiguring a radio network that supports point-to-multipoint links, the method comprising:

detecting a failed transmission of a signal; and

rerouting the signal to a terminal that is configured to repeat the signal to a destination terminal, wherein the terminal is configured to support simultaneously a plurality of channels, the signal being transmitted over one of the plurality of channels.

33. A method according to claim 32, further comprising:

instructing the terminal to operate in at least one of a first mode for supporting load sharing over the plurality of channels and a second mode to perform testing.

34. A computer-readable medium carrying one or more sequences of one or more instructions for reconfiguring a radio network that supports point-to-multipoint links, the one

or more sequences of one or more instructions including instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:

detecting a failed transmission of a signal; and

rerouting the signal to a terminal that is configured to repeat the signal to a destination terminal, wherein the terminal is configured to support simultaneously a plurality of channels, the signal being transmitted over one of the plurality of channels.

35. The computer-readable medium according to Claim 34, wherein the one or more processors further perform the step of:

instructing the terminal to operate in at least one of a first mode for supporting load sharing over the plurality of channels and a second mode to perform testing.

18